Journal of Pediatric Surgery (2011) **46**, 1231–1235

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Journal of Pediatric Surgery

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Acquired posterior urethral diverticulum following surgery for anorectal malformations

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Received 19 March 2011; accepted 26 March 2011

Key words:
Anorectal malformation;
Posterior urethral diverticulum;
Complications

Abstract

Purpose: Despite significant advances in the surgical management of anorectal malformations (ARMs), many children still experience significant debilities from potentially avoidable complications. One complication, the posterior urethral diverticulum, may have untoward consequences if not recognized and treated.

Methods: A retrospective cohort review was undertaken of male patients who presented to us with persistent problems after being operated on elsewhere for ARM. Twenty-nine patients presented with a urethral diverticulum. Their charts were reviewed for the type of malformation, prior repair, presentation, treatment, and postoperative follow-up.

Results: Twenty-nine patients were identified that fit the criteria for this study. To date, 28 patients have been managed with reoperation. Urinary complaints were the most common presenting symptoms. All patients were repaired using a posterior sagittal approach. Pathology of the diverticulum in one patient revealed a well-differentiated mucinous adenocarcinoma.

Conclusion: The incidence of acquired posterior urethral diverticulum has decreased with the popularization of the posterior sagittal incision. There is a theoretical concern that the incidence may increase with the use of laparoscopy for the treatment of ARMs especially those where the fistula is below the peritoneal reflection. Once detected, the diverticulum should be excised.

Despite significant advances in the surgical management of anorectal malformations (ARMs), many children still experience significant debilities from potentially avoidable complications with urologic sequelae [1,2]. The most common urologic complications occurring with the surgical management of ARMs are rectourinary fistulas (23.3%), bladder injuries (22.5%), urethral injuries (20.2%), posterior urethral diverticula (17.8%), injuries to the external genitalia (14%), and ureteral injuries (0.8%) [1]. Urethral diverticulum in males without ARM may be congenital in origin [3-5] or may occur following trauma, urethral stricture, or prior urethroplasty [5,6].

Failure to mobilize the distal rectum adequately and creating a too distally located colostomy have been noted to contribute to the occurrence of urologic complications in ARMs [2]. In addition, a suboptimally done high-pressure distal colostogram may contribute to errors in diagnosis and nonrecognition of rectourethral fistulas [2]. Ligating the rectal stump at some distance from the urethra increases the

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doi:10.1016/j.jpedsurg.2011.03.061

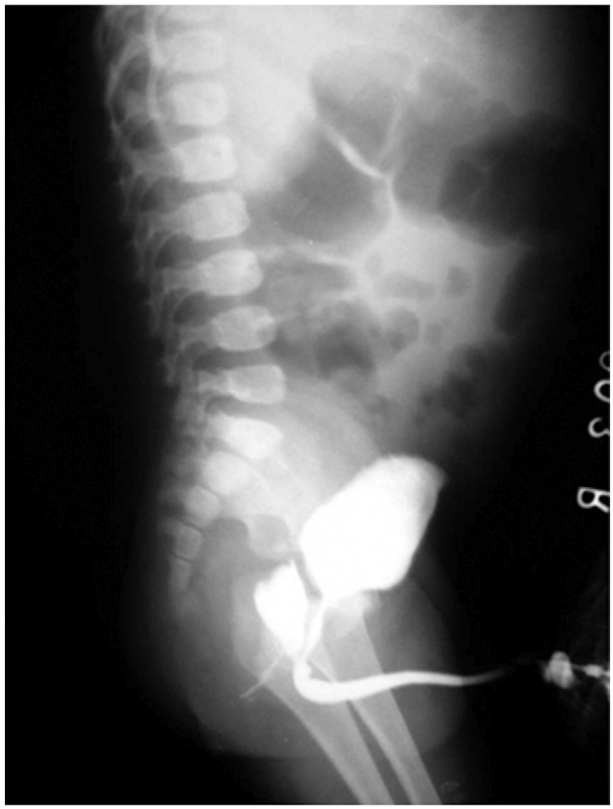

Fig. 1 Voiding cystourethrogram showing large posterior urethral diverticula and clear communication to urethra.

risk of formation of a diverticulum [1,7]. A diverticulum develops from a retained part of the rectourethral fistula and balloons out as more urine is sequestered in the pouch-like structure (Fig. 1). This diverticulum that is colonic mucosa bathed by urine risks urinary dribbling, stone formation, and infection. Of concern is the potential for the development of cancer [8].

We sought to review the clinical manifestation, treatment offered, and outcome in patients who presented to our clinic with a posterior urethral diverticulum after surgery for ARMs.

1. Methods

A retrospective cohort review of 260 male patients who presented to our institution over a 22-year period (1982-2010) with persistent problems after being operated on for ARMs was performed. Thirty patients presented with symptoms suggestive of a urethral diverticulum or were found to have a posterior urethral diverticulum during evaluation for fecal incontinence. Patients with congenital urethral diverticulum were excluded from this study. The relevant information on the type of malformation, previous repair, clinical presentation, management, and postoperative follow-up was analyzed.

2. Results

Thirty patients had posterior urethral diverticulum during the study period. All were males who had been operated on previously for ARMs. Twenty-three patients (77%) had an abdominoperineal or sacroperineal pull-through as a form of definitive repair before presentation. The other patients had a posterior sagittal anorectoplasty (4) and laparoscopic-assisted pull-through (2). The nature of the surgery was not known in 1 patient. They presented 6 months to 24 years after the initial definitive surgery (median of 9 years).

The most common urinary symptom was daytime dribbling, and 13 patients (45%) presented with this symptom. Other urinary symptoms included recurrent urinary tract infections in 5 patients, passage of mucus through the urethra in 2 patients, pain with ejaculation in 2 patients, urinary stones in 1 patient, and 1 patient with adenocarcinoma of the diverticulum. Twenty-four patients (83%) were incontinent of feces at presentation. One patient who had a laparoscopy-assisted pull-through for a rectobulbar urethral fistula presented with a calcified pelvic mass (Fig. 2). The median time to presentation with symptoms was 3 years (range of 4 months to 6 years after the repair). In the asymptomatic group, in which the diverticulum was incidentally found, the median time to presentation was 10 years (range of 1-16 years).

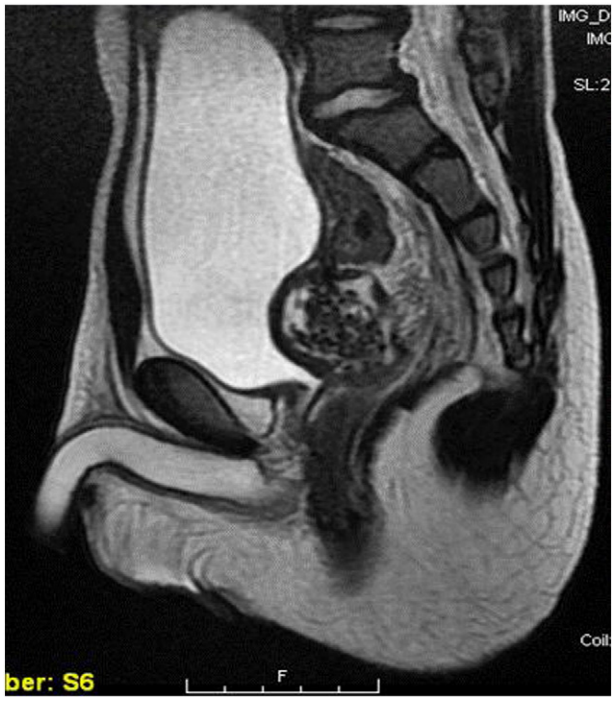

Fig. 2 Magnetic resonance imaging of the pelvis showing calcified mass in the posterior urethral diverticulum in a patient after laparoscopy-assisted pull-through of a rectobulbar urethral fistula.